REMARKS

Applicant has amended claims 2, 4, 5, 11, 13, 16 and 17 to overcome the claim objections that have been raised by the Examiner. It is submitted that claims 1-2, 4-5, 6-7 and 9-19, as now presented, are in condition for allowance. Applicant has noted that the Examiner has indicated that claim 1 has been allowed. Accordingly, Applicant has amended claims 2, 4 and 5 to improve the language thereof to overcome the Examiner's objections. Accordingly, it is now respectfully submitted that claims 1-2 and 4-5 are in condition for allowance.

Applicant has amended claims 11, 13, 16 and 17 to overcome the Examiner's claim objections as to proper antecedent basis and to clarify the language thereof. It is respectfully submitted that these claims as now amended clearly are in condition for allowance.

Applicant is submitting revised drawings of FIGS. 1, 2, 3, 4, 5 and 6 to properly depict the cross-section for the U shaped seal member 30 in the drawings. In the drawings originally filed, the upper portion of the cross-section of the U shaped member is incorrectly cross-hatched. It is respectfully submitted that these changes as now properly presents the upper section of the seal and overcomes the Examiner's objection to the drawings.

The Examiner's §112 objections to claim 6-7 and 9-19 have been noted and, accordingly, claim 6 has been amended to delete the words "reduce the operating temperature" and insert "to provide an increased operating life of the coolant union during operation." This language in claim 6 is fully supported in the specification on page 3, lines 10 through 13. The language to reduce the temperature there-between during operation in claim 13 has been amended to "provide self-lubrication of the annular sealing surfaces during operation." Claim 14 has not been amended but

the Examiner has objected that the fluid coolant constitutes new matter. It is respectfully submitted that the Examiner should note that on page 6, lines 9-14, the fluid coolant union 10 is designed to pass fluid coolants such as water-based, oil-based, air-oil mist based and air-based coolants. Additionally, on page 9, in the first full paragraph, it is pointed out that the reduced amount of fluid coolant passing between the annular sealed surfaces 20a and 22a results in a cleaner operating and more efficient fluid coolant union. Thus, as is readily apparent to one of ordinary skill in the art, the fluid coolant may be the lubricating medium in the present invention. Thus, it is respectfully submitted that the Examiner's objection to claim 14 has been respectfully overcome.

The Examiner has rejected claims 6-7 and 10 as being unpatentable over Kubala in view of Deubler, U.S. Patent No. 2,723,136. Applicant specifically request the Examiner reconsider his rejection based upon the Kubala structure, because the Kubala structure does not remotely relate to the disclosed and claimed structure of the secondary seal assembly. The Examiner has rejected claims 6-7 and 10 as unpatentable over Kubala because Kubala discloses a tubular carrier member for directing fluid coolant and having a seal assembly which slidably moves the carrier member and sealing ring to engage the seal faces of the assembly when pressurized by overcoming spring 86 which separates the seal assembly. The Examiner acknowledges that Kubala fails to teach that one of the annular surfaces is chamfered but that he relies upon Deubler to teach such a structure. However, the Deubler reference, Patent 2,723,136, only discloses a structure that has a "non-rotating slidable sealing block having a hardened and lapped tool steel end face which is spring pressed against a rotating lapped carbon sealing face carried by the end of the rotor." See column

1, lines 47-51. Thus, Deubler does not disclose or teach a rotary union similar to that of Kubala because in Deubler's union, the alleged seal faces are always in contact because of spring 72 and in Kubala the rotor union is positioned and the seal assembly is out of contact with one another by the utilization of spring member 86. Thus, Deubler does not disclose a non-rotating seal member subject to axial movement to a pressurized position or any structure where alleged seal members are spaced apart from one another in a pressurized position where they are then arranged to provide a seal. In the Deubler '136 patent, the alleged sealing block and lapped tool steel end face are always in contact. Thus, it is respectfully submitted that claim 6 is in condition for allowance over these references. Because claims 7 and 10 are dependent from claim 6, these claims are also allowable over these references.

The Examiner has further rejected claims 13, 15, 16 and 19 as being unpatentable over Kubala, U.S. Patent 5,617,879, in view of Schoenmeyr, U.S. Patent No. 4,281,839. The Examiner relies upon Schoenmeyr because he allegedly teaches a rotary face sealing apparatus comprising silicon carbide seals having graphite particles embedded in their surfaces to impart self-lubricating properties. However, it should be noted that the Schoenmeyr structure is not a rotary union which receives fluid coolant to direct the coolant through the union to an associated tubular rotor, as required by Applicant's claim 13. Instead, in the Schoenmeyr the alleged seals are always in contact with one another and there is no flow through the seals because a shaft seal is not a rotating union. This is a completely different application and does not relate to or teach one of ordinary skill in the art to apply the shaft seals technology to the rotating union. In Schoenmeyr, there is no fluid passage at all from one side of the "so-called" seal to another or through the unit. However,

in claim 13 a rotor union passes a coolant fluid through the union. Thus, Schoenmeyr is directed solely to a rotary sealing apparatus for sealing a rotating shaft and a relative non-rotating wall or a housing. Also, on page 3, lines 19-22 of the '839 patent it is pointed out that the outer diameter of the shaft it is pointed out that the seal ring inner flange 22f is slightly larger than the outer diameter of the shaft but no so large that the O-ring 26 can squeeze through the gap. Thus, it is crystal clear that there is no flow of the liquid between either side of the '839 rotary sealing apparatus. Finally, as pointed out in column 3, lines 66 to the top of column 4, the opposing grooves 37 stand outwardly from the bore 36 but do not extend in the O-ring seal area. The grooves permit oil circulation to and from the main oil chamber for cooling and lubrication and allow access to the back of seal 23 for removal purposes. Thus, Shoenmeyr circulates an oil against his rotary sealing apparatus with an attempt to cool the same. Accordingly, it is submitted that it would not be obvious to modify Kubala to have graphite particles embedded in surfaces to impart self lubricating property to the seals when such a structure has not been found in any type of rotating union.

Thus, it is respectfully submitted that claim 13 as well as dependent claims 14-19, as now presented, are in condition for allowance for each and all the reasons given above with respect to claim 13.

Respectfully submitted,

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